

# REPORT ON

## WORKSHOP ON EARLY WARNING SYSTEMS IN KENYA



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## Abbreviations

AARNET	Animal Agriculture Research Network
ADB	African Development Bank
AFRALTI	African Advanced Level Telecommunications Institute
ALRMP	Arid Lands Resource Management Project
ASAL	Arid and Semi Arid Lands
AU-IBAR	African Union Interafrican Bureau on Animal Resources
CB-LEWS	Community Based Livestock Early Warning System
CBO	Community Based Organization
CHARM	Collaborative Historical African Rainfall Model
CIC	Community Information Center
CMO	Crisis Mitigation Office
CMP	Crisis Mitigation Project
CNRI	Center for Natural Resource Information Technology
CORDAID	Catholic Organization for Development Aid
DCM	Drought Cycle Management
DLPO	District Livestock Production Officer
DPPB	Disaster Preparedness and Prevention Bureau, Ethiopia
DVO	District Veterinary Officer
ENSDA	Ewaso Nyiro South Development Authority
EROS	Earth Resources Observation System
EWS	Early Warning System
FAO	Food and Agriculture Organization
FEWS NET	Famine Early Warning Systems Network
FVA	First Voice Africa
GIS	Geographic Information System
GL-CRSP	Global Livestock Collaborative Research Support Program
GPS	Global Positioning System
KFSM	Kenya Food Security Meeting
LEWS	Livestock Early Warning System
LINKS	Livestock Information Network and Knowledge System
MODIS	Moderate Resolution Imaging Spectroradiometer
MoLFD	Ministry of Livestock and Fisheries Development
NARS	National Agricultural Research System
NDVI	Normalized Difference Vegetation Index
NGO	Non Governmental Organization
NOAA	National Oceanic and Atmospheric Administration
PARIMA	Pastoral Risk Management
PCU	Project Coordination Unit
SMS	Simple Message Service
TAMU	Texas Agriculture and Mechanization University
USAID	United States Agency for International Development
USGS	United States Geological Survey

## **Introduction**

Being home to some of the poorest and most marginalized people and majority of livestock, arid and semi-arid lands are gaining increasing attention of government, development partners, and civil society organizations. These areas are characterized by repeated occurrences of drought and high variability in precipitation and a combination of these and other factors has reduced the ability of many livestock keepers to maintain their assets or to respond before conditions deteriorate. Repeated analysis supports arguments for a more effective spatially coherent early warning system in the country, especially as it affects livestock throughout the pastoral and mixed farming regions. The judicious use of timely and reliable early warning information is useful in reducing and managing risks such as droughts that often reduce assets as part of the solution to alleviate food insecurity. Crisis prevention involves the ability to foresee and the means to prevent, prepare for and mitigate or resolve crisis and conflict. More important, however, is to strengthen peoples' capacity to be able to plan ahead by making informed decisions that will minimize the debilitating effects of drought. This capacity can be strengthened at three levels: policy, agency, and community.

A number of organizations are engaged in providing early warning information that can help livestock keepers to cope with drought. These include the Livestock Information Network and Knowledge System (LINKS) of the Global Livestock Collaborative Research Support Program, Arid Lands Resource Management Project (ALRMP), Famine Early Warning Systems Network (FEWS NET) and the ADB/ASAL based Support to Livestock and Rural Livelihoods Project of the Ministry of Livestock and Fisheries Development (MoLFD). LINKS has developed technologies for providing a livestock early warning system on forage and drought conditions for pastoral livestock producers that depict forage scenarios every 10 days and forecasting what the forage situation is likely to be 30, 60, and 90 days into the future. The system is based on data from geo-referenced monitoring sites which are analyzed and synthesized through automated models and then broadcasted via satellite, thus reducing the need for human intervention in data collection, analysis, synthesis, and dissemination; often a laborious, inefficient, time-consuming and expensive exercise. The natural resources and drought management component of the ALRMP aims to mitigate the risk posed by drought and other factors by strengthening and institutionalizing natural resources and drought management systems. This in turn will reduce the vulnerability of the population in areas characterized by frequent acute food insecurity related to drought. The early warning system is based on field monitoring of indicators of drought, including livestock prices, at the household level with data being synthesized at the district level.

The goal of FEWS NET is to strengthen the abilities of African countries and regional organizations to manage risk of food insecurity through the provision of timely and analytical early warning and vulnerability information. FEWS NET collaborates with international, national, and regional partners to provide timely and rigorous early warning and vulnerability information on emerging or evolving food security issues. Data and information monitored include remotely sensed data and ground-based meteorological,

crop and rangeland conditions, as early indications of potential threats to food security. FEWS NET also focuses its efforts on strengthening African early warning and response networks. Activities to do this include capacity development, network building and strengthening, developing information useful to policy, and forming consensus about food security problems and solutions. FEWSNET reports are based on analysis of secondary data provided by other sources including Ministries and Non Governmental Organizations, and information generated by LEWS is also included in their syntheses. The Ministry of Livestock and Fisheries Development is a public institution that is mandated to provide, among others, research, extension, advisory and training services in the area of livestock development, including production, consumption, and marketing of livestock and their products. The Ministry has a hierarchical structure from the National to Provincial, District, Division, Location, and Sub-Location levels with the districts being the focal points for implementing programmes and policies aimed at empowering local communities to access the services thus provided. The community-based early warning system of the ADB/ASAL project is supporting the setting up of community-based livestock early warning systems in 14 districts. It will also support the building of capacities of pastoral communities to develop, launch and sustain coping strategies during crises. In addition the project will finance training and equipping of site monitors and institutions involved in managing climate change and drought crises in the ASALs.

A workshop was held on 4<sup>th</sup> October 2006 at the African Advanced Level Telecommunications Institute (AFRALTI) bringing together 38 participants from government, development partners, regional development organizations and donors to deliberate on early warning issues and chart a path for the future of early warning systems in Kenya. The workshop was hosted by LINKS with financial support from CORDAID Foundation, Concern Worldwide and Ministry of Livestock and Fisheries Development through the ADB ASAL-based Livestock and Rural Livelihoods Support Project. The workshop was officially opened by Mr. Julius Kiptarus, the Director of Livestock Production in the Ministry of Livestock and Fisheries Development.

## **Opening Remarks**

*James Tendwa, Project Coordinator ADB/ASAL Project*

The ADB/ASAL Support to Livestock and Rural Livelihoods Project is focusing on livestock marketing, drought and food security, livestock health and livestock early warning systems. However in spite of the many actors in the early warning systems, there are few interactions. In this context the meeting today is important for the Community Based Livestock Early Warning System, LINKS and other stakeholders to create synergies and share their experiences. These interactions are important for project success. There have been many investments done in the ASALs, but there is little to show in terms of impacts due to lack of coordination. It is important to see clearly the roles of each institution in early warning systems, to see one another's strengths and weaknesses and how the systems could complement one another. We acknowledge the role that LINKS has played in organizing this meeting.

Ladies and gentlemen it is now my pleasure to invite the Director of Livestock Production to officially open the workshop.

## **Workshop Opening Speech**

Programme directors,  
Project coordinators,  
Ladies and gentlemen;

I am pleased to be here with you this morning during the official opening of this workshop on early warning systems. I wish to express my appreciation to the Global Livestock Collaborative Research Support Program LINKS/Livestock Early Warning System for coordinating the process leading to this occasion for a job well done. It is also important to acknowledge the roles played by other organizations towards this occasion. These include: the ASAL based Livestock and Rural Livelihoods Support Project, Cordaid and Concern Worldwide. We look forward to the strengthening of this type of collaboration and also the widening of participation by other players in such activities.

Ladies and gentlemen:

This workshop comes at a time when our country has just emerged from a serious drought that threatened assets and livelihoods of many communities especially among pastoral communities where livestock are the source of subsistence and income. As it is now, many areas have not yet recovered from the impacts of this drought. As we all know pastoralism is the dominant way of life in districts falling under the arid and semi-arid lands of Kenya. These districts account for about 30% of the country's population and occupy over 80% of the total land area and hold over 50% of all livestock. Only several decades back, pastoralists were the primary users of our rangelands. Strategies such as mobility, matching livestock species to the environment and herd splitting ensured their survival as well as the dynamic equilibrium of the ecosystem. Under such conditions environmental degradation was insignificant. However, human and livestock populations have tremendously increased over the years. Pastoralists have lost their most valuable grazing resources to other uses and tenure systems such as agriculture, game reserves and private ranches. This has greatly constrained pastoral mobility and eroded the rangelands' ability to support the increasing sedentary pastoral population. The overall trend in these rangelands is depicted by decreasing productivity, increasing degradation and diminishing ability to cope with ecological stress.

It is important to note that the frequency and length of drought periods have continued to increase in many parts of the country. This is aggravated by high variability in the amount and spread of rainfall reducing the ability of many livestock keepers to maintain their assets or to respond when conditions are good.

Ladies and gentlemen

A number of organizations are engaged in providing early warning information that can help livestock keepers cope with drought. Key among these includes the Global Livestock Collaborative Research Support Program, the Arid Lands Resource Management Project, FEWS NET, and the recently launched Community Based Livestock Early Warning System.



- The GL-CRSP LINKS/LEWS project has developed models for depicting forage scenarios every 10 days and forecasting what the forage situation is likely to be 30, 60, and 90 days into the future. The outputs from the system are used to generate advisories usable by agencies and communities of livestock producers.
- The ALRMP early warning system is based on field monitoring of indicators of drought, including livestock prices, at the household level with data being synthesized at the district level.
- FEWS NET collaborates with national, regional and international partners to provide timely early warning and vulnerability information on emerging or evolving food security issues.
- The CB-LEWS project of the ADB/ASAL project is supporting the setting up of community-based livestock early warning systems in 14 districts. It will also support the building of capacities of pastoral communities to develop, launch and sustain coping strategies during crises. In addition the project will finance training and equipping of site monitors and institutions involved in managing climate change and drought crises in the ASALS.

Ladies and gentlemen:

Providing information on impending drought in sufficient lead-time will allow government, development agencies and pastoral communities to react to the conditions in a timely manner to prevent resource degradation and loss of assets. With regard to livestock owners, timely decision making concerning availability of forage supply, movement, de-stocking and restocking of livestock will be valuable for sustainable livestock production. In addition the indigenous knowledge of the pastoral societies regarding range and livestock will be much more effective if they can have access to near real-time information on impending forage shortages for livestock and location of forage supplies that minimizes conflict during periods of restrictive conditions. In actual fact a combination of the indigenous knowledge and modern science can be used by decision makers to formulate clear mitigation strategies to reduce risk from extremes of weather conditions.

Ladies and gentlemen:

A key challenge is how to strengthen the use of the livestock early warning information by key organizations and broaden the coverage and dissemination among pastoral communities. Equipping agencies and communities with appropriate tools and information will help them plan for and respond to emerging drought situations. This is based on the firm belief that if the right institutions and mechanisms are put in place, most drought-associated disasters that are currently facing many communities could be mitigated, providing communities with sustainable means of meeting the demands for food and other basic necessities of life.

This workshop provides the opportunity for stakeholders to explore ways of building early warning capacities among communities of livestock keepers and help to package and disseminate the information to the relevant target groups. I wish to express my sincere wish that key concerns regarding early warning system will be discussed and the way forward agreed. One of these is the fact there are many players but the collaboration

and interactions are somehow limited. Collaboration needs to be strengthened, information should be shared widely and discussions of this nature more frequent. In doing so we shall realize synergies from the investments from individual organizations. We all know that at the end of the day we are all basically targeting the same group but unfortunately doing it without sufficient regard to the role of our partners.

I now wish to conclude by expressing our appreciation for the contribution that has been made by all development agencies in this area. I also wish to express my appreciation for the role that staff in the Ministry and the community have played in this process. I hope that this cooperation will continue and enable the realization of our broad national objectives and in the delivery of quality and prompt services to the people that we serve.

Ladies and gentlemen, it is now my pleasure to declare this workshop officially open.

Thank you.

J. Kiptarus  
Director of Livestock Production

## Context and Theme of the Workshop

Gatarwa Kariuki, *LINKS*

### Background

- Tracking rangeland environment in a predictive manner (early warning) is usually the first key step towards effective mitigation and intervention.
- Pastoralists in eastern Africa have demonstrated an ability to describe their environment/recognize drought, but unable to use information in a predictive manner (Dyson-Hudson 1991).
- Scientists were for years inept at tracking the rangeland environment in a predictive manner (Dyson-Hudson 1991).
- Early Warning Systems (EWS) instituted by national governments mainly focused on crop production.
- Rainfall and remotely sensed forage situation are the earliest indicators of drought. And although they are not perfect indicators they have capacity to trigger local participatory assessment and mitigating strategies.
- Early warning supports traditional coping strategies such as herd splitting and stock movement.
- Linking EWS to local disaster mitigation helps to identify and inform of potential threats early enough, and is more effective for minimizing loss of assets and livelihoods. It also reduces vulnerability to natural hazards (see the Background Document for the National Policy for the Sustainable Development of ASALS of Kenya, September 2005 and MoLFD Taskforce Report, August 2006). Early interventions are therefore the most cost-effective approach to food security.
- Linking markets with early warning can facilitate response to disaster situations and allows phased response such as early disposal of non-essential livestock, cost-effective destocking strategies.
- Droughts are the result of declining or lack of rainfall which affects plant growth and therefore forage availability. Next to be affected are the livestock and through the food chain people are affected by lack of sufficient food either from plants or animals. The rationale then is that protecting livelihoods first rather than people is the cheaper option as indicated below.

### Cost of 1999-2000 drought in Kenya (US\$ million)

<b>Actual drought costs</b>	<b>300.0</b>
Value of livestock lost	38.6
Cost of current EWS	5.0
<b>Total drought costs</b>	<b>343.6</b>
<b>Potential cost given appropriate early response</b>	
Cost of EWS with rapid emergency response capacity	51.9
Cost of subsequent essential relief	120.0
<b>Total necessary costs</b>	<b>171.9</b>
<b>Potential savings</b>	<b>171.6 (50%)</b>

Source: Acacia Consultants, 2001: Drought related livestock interventions report, November 2001

## Challenges

Managing crises and disasters are part of reducing vulnerability, improving food security and livelihoods to alleviate poverty and therefore contribute to overall social and economic development. Debates about the role and contribution of early warning to this process continue to occupy the thinking of policy makers, researchers, development agencies, non-governmental and community-based organizations involved in design, planning and implementation of programs and policies aimed at achieving development for the larger population. This is especially so following the serious drought that ravaged many parts of Kenya between September 2005 and March 2006 and whose effects continue to be felt as at the holding of this workshop. The following observations, concerns, and challenges, among many others in the past and at present, are food for thought in terms of what is there and what needs to be done to reduce the pernicious effects of drought on assets and livelihoods now and in the future.

- “...acute food insecurity only becomes newsworthy when famine is imminent or already present and the pictures are guaranteed to shock. It is of little use for publicizing genuine early warning...” Margaret Buchanan-Smith. Role of Early Warning Systems in Decision Making Processes. Overseas Development Institute, London.  
[http://www.drought.unl.edu/monitor/EWS/ch2\\_Buchanan-Smith.pdf](http://www.drought.unl.edu/monitor/EWS/ch2_Buchanan-Smith.pdf)
- “In Kenya, why does this keep happening?” Emily Wax. Washington Post Foreign Service. Sunday, January 8, 2006. <http://www.washingtonpost.com/wp-dyn/content/article/2006/01/07/AR2006010701024.html>.
- “...How come we have money to feed people during emergencies but we do not have money for preventive action?” Prof. Wangari Maathai, 10 May 2006.

These issues bring to the forefront the need to renew and reorient thinking and action, focusing on what the priorities are, institutional memories, bureaucracy, and capacities to manage crises.

## Emerging issues

It is important to note that in the context of operationalizing early warning systems:

- “Early” must be functional in terms of being proactive rather than reactive and providing a sufficient lead time for action.
- A predicted phenomenon may or may not occur, but people should be warned and prepared.
- Timeliness in reporting is crucial. Early warning systems must have a sell-by date so that feedback is also delivered in good time.

- High-tech approaches are not necessarily bad. Since information flow does not depend on a single delivery mode explore opportunities for complementarities.
- For sustainability of a system, there is need to recognize that nothing is free as someone has to foot the bill.
- There will be greater positive impacts if community involvement is intensified and when communities are empowered through access to reliable and timely information.

### **Workshop objectives**

- Identify and evaluate the characteristics of different early warning systems with respect to their design, structure, costs, and outputs.
- Evaluate the methodologies used in data collection, reporting, and analysis.
- Evaluate the methods used to disseminate early warning information.
- Explore opportunities for capacity building at local level so as to link early warning with decision making by communities.
- Situate the future of early warning systems in terms of the institutional and policy issues that need to be addressed.

## **Global Livestock CRSP Livestock Early Warning System**

*Robert Kaitho, LINKS*

Robert began by emphasizing the importance of the comments made by Mr. Tendwa and the Director of Livestock Production on the importance of early warning systems. He informed the participants that LEWS started in 1997, with funding from GL-CRSP. From 2004, the project refocused attention on livestock marketing information. Initially the project developed a marketing system focused on markets but at present the project is considering factors like diseases, water and conflicts.

He then presented the process of the development of LEWS.

- The early warning system was developed to monitor nutrition and livestock health for food security of humans in East Africa.
- It is based on blending monitoring, modeling and spatial technologies to improve food security of pastoral communities.
- The model has the following modules:
  - Forage
  - Marketing
  - Disease
  - Water
  - Conflict
- The forage module is fully developed and operational; the marketing module is functional with respect to reporting livestock sales and prices and still under development to accommodate livestock products.

### **LEWS monitoring zones**

- The eastern Africa region is characterized into four zones: arid, semi-arid, sub-humid and humid.
- The first two which are of primary interest for early warning are to be found mainly in Kenya, Ethiopia and Somalia and to a lesser extent in northern Tanzania.
- Each country is then divided into zones and monitoring sites are located in each of the zones. Kenya has 3, Tanzania 3, Ethiopia 2 and Uganda 1.
- A number of sites are established in each zone and these are monitored regularly to provide data for field validation of the LEWS models.

### **LEWS processes**

The design of the LEWS monitoring sites involves a number of steps that include mapping of pastoral areas, characterization of vegetation and soil at the monitoring sites, building of parameter files, automation of data processing, developing map products, and field verification. The accomplishment of the process requires a number of inputs based on scientific modeling, testing, stabilization and regular verification of biophysical models, technologies and spatial analysis tools. These include:

- PHYGROW-this is the main model which is hydrology-based, and integrates spatially explicit multiple-species plant growth, hydrology of the site and types of animals.
- NUTBAL-a livestock nutritional balance analyzer used to assess nutrient requirements, nutrient intake, and animal performance.
- Near Infrared Reflectance Spectroscopy (NIRS)-involves fecal profiling of livestock to determine the quality of the forage recently consumed prior to defecating.
- Spatial characterization and GIS tools.
- NOAA RFE weather data and EROS NDVI data in a 8x8 km grid.
- Trained eyes and ears

### **Overall protocol**

- The LEWS monitoring and validation process involves intensive use of science, experience, learning by doing and capacity building. The initial steps involve establishing zones of interest by institutions committed to the process followed by generation of zonal maps with roads, landmarks, and climatic clusters. Climate coefficients are then developed and sourcing for daily rainfall, temperature and radiation data is done. The participating institutions then designate zonal coordinators who build teams of site monitors. They also train coordinators in the use of tools including GPS, digital cameras, basic computer literacy, use of Worldspace radios, and preparation of photo guides followed by training in field sampling and site verification techniques.
- The next steps involve identifying the relevant plant parameters, sourcing plant preferences for different animals, soil parameters and daily rainfall, temperature and radiation data, developing grazing restocking and destocking rules, and stabilizing the parameter files.

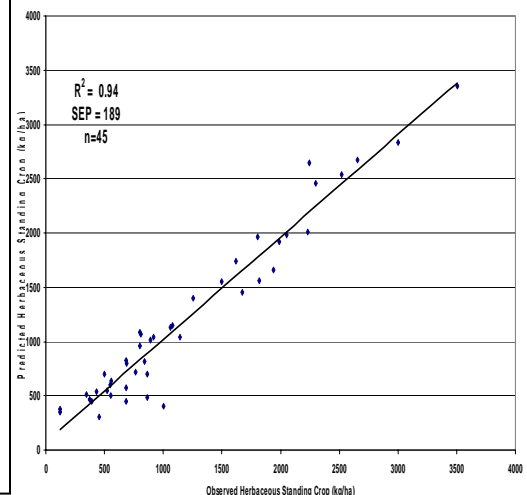
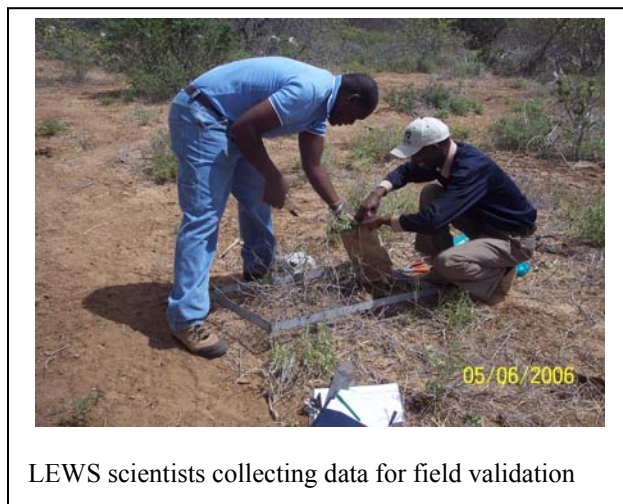
### **The PHYGROW model**

- Characterizes grazingland forage production involving multiple plant species interacting with soils, weather and selective grazing.
- Dominant plant community in a grazing area is characterized by species initial standing crop and percent maximum expression
- Physical characteristics of soils are represented by layers from established soil data from EROS FEWS-NET
- Typical de-stock/restock rules are derived for “modal” sites based on consensus of local focus groups.
- Establishing field benchmark forage conditions is done using quadrats designed for the Phygrow model. Measurements are taken at 50 locations along a 200 m transect resulting in 500 sampling points capturing the basal cover of grasses, frequency of forbs using a 5x5 cm frame, and the true canopy cover of shrubs and trees using a mirror to capture the canopy cover hits along the transect.
- Soil parameters that are considered include water storage capacity, slope, the soil depth, rock factor, saturated hydraulic conductivity, wet and dry bulk densities, and the volumetric water content of the soil.

- The plant characteristics on site include the plant name, initial standing crop, percentage of maximum expression, and site nutrient factor.
- The model takes into account the decision rules based on type of animal including domestic livestock and wildlife, the planning horizon which is based on the Julian calendar covering 365 days, maximum and minimum stocking rates, and plant preferences which are based on type of animal, forage demand, and whether the plant is preferred, desired, or not eaten by the specific animal.
- Weather characteristics that are included in the model include the site latitude and longitude coordinates, the year, daily maximum and minimum temperatures, rainfall and solar radiation. Rainfall is derived from the Collaborative Historical African Rainfall Model (CHARM) which provides data on a daily basis since 1961.

### Field verification

- Undertaken at regular intervals to test whether the models are accurately simulating the field forage conditions
- This is done using 5 – 50 m transects with 10 quadrats each allocated to representative areas with double sampling using dry weight ranking and clipping a total 15 of 50 quadrats in 8x8 km grid
- The correction coefficient between predicted and observed forage is 0.94 as shown in the figure on the right.



### Final analysis

- Model parameters are reviewed and adjusted to correct discrepancies between field verification and model output.
- Once the model is stable for each point, the parameter file is placed in the automation site where the model is linked with the satellite weather data and output packaged into html files for distribution over the internet and to key communication nodes using Worldspace satellite radios.
- Advisories for Kenya, Ethiopia, Tanzania and Uganda are provided on a monthly basis. The advisory also includes a trend analysis of livestock prices for a selected market.



- LEWS generates unique map products providing forage status in each country zones and a regional forecast 60 days ahead.
- The LEWS maps are generated from the PHYGROW model. They are not satellite images.
- Advisories are sent out to users in an expanding listserve through e-mail and also posted to the LEWS website <http://glews.tamu.edu.tamu/africa> (see appendix III on how to locate different sites and products).
- Community outreach designed to create awareness and empower communities to make decisions based on the advisories.
- LEWS contributes to the Greater Horn of Africa Food Security Bulletin.
- LEWS tracked the September 2005 to March 2006 drought very well.

## Reactions

- Walter, USAID: To what extent is data collection continuous? How is that being sustained now that the LEWS project ended?

Response: Periodic i.e. every 6 months, 25% of the monitoring sites are sampled by the LINKS team, field monitors and zonal coordinators. There were many vegetation changes at the various sites, and the project puts into account these changes by sending field monitors and zonal coordinators to verify data in the field and this is fed back to the system.

- Kateiya, ENSDA Narok: The  $R^2$  is very high, but the sample size (n) very small. This indicates multi-collinearity, meaning the data might have been moderated.  
Response: The data has not been adjusted in any way; that is why some points are located away from the trend line. This is an old graph; several other field verification exercises have been conducted since then.
- Ouma, DLPO Samburu: There is need to build capacity of the MoLFD especially district range officers for forage monitoring to be part of their duties. They should know the location of sites being monitored, do verification and provide feedback.  
Response: Agreed, this would improve our products.
- Ngeiywa, MoLFD: Since NDVI shows greenness; won't a pastoralist just take his animals where it is indicated green?  
Response: Yes, the map indicates deviation from normal, so green means there is forage for LEWS, but not necessarily for NDVI.
- Gideon, FEWS NET: The queries indicate there is need for capacity building for users to understand the system and how to interpret data from the LEWS products.
- Yegon, MoLFD: Is *Prosopis spp* commonly referred to as '*Mathenge*' really a problem?  
Response: Yes, it is a major problem spreading in many pastoral areas, while the forage is of very little value to livestock.

- Mwongela, DVO Mwingi: Is it true that drought is becoming more frequent and severe?

Response: True, climate change has occurred due to increased human activity and high livestock population leading to desertification. We have made a presentation on this in a different forum.

# Perspective on FEWS NET Analytical Approaches in the Greater Horn of Africa

*Gideon Galu, FEWS NET*

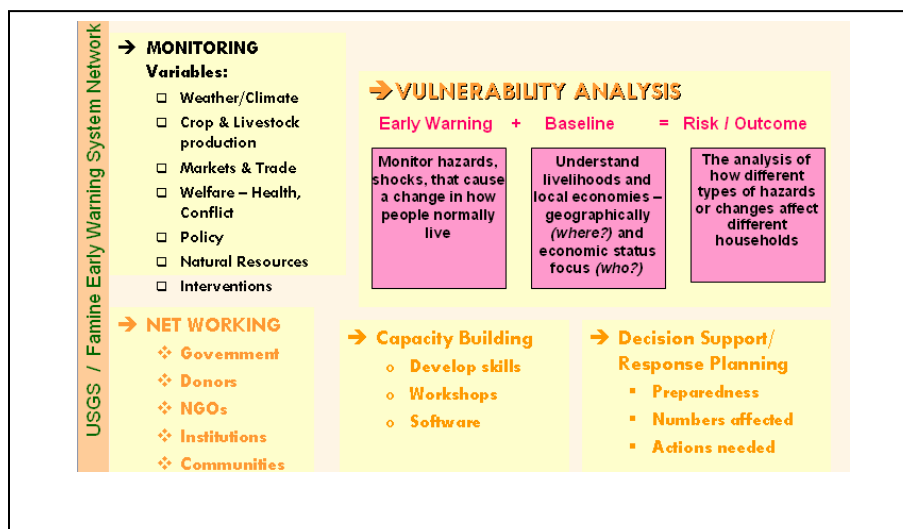
## Perspective

- Background/Context
  - Framework
  - Network partners
- Monitoring and analytical approaches
  - Monitoring field and remotely sensed data
  - Livelihoods based analysis
  - Development of new decision support tools
  - Regular region-wide field assessments
- Capacity building at national/district level
  - Technical support in food security monitoring and analysis
- Major challenges
  - Availability and reliability of data/partnerships
  - Understanding livelihoods
  - Accurate identification of chronic vulnerable communities and response

FEWS NET has resident representatives in 18 African countries: Regional Offices in Bamako, Johannesburg and Nairobi. FEWS NET is now going Global – Afghanistan and Central America.

The FEWS NET vision: To provide decision makers and planners with accurate, timely, and actionable information to prevent hunger-related deaths, mitigate food insecurity and to strengthen livelihoods in Africa, Central America and the Caribbean, and Afghanistan through providing early warning information related to food security threats, developing information networks and building local capacity for information generation and dissemination.

## FEWS NET framework



## Partners

These include, among others, Livestock Early Warning System, United States Geological Survey, World Food Program, United States Department of Agriculture, Care International, Regional Center for Mapping of Resources for Development, and Desert Locust Control Organization.

## Available resources: remotely sensed products and tools

Dekadal:	Daily:
<input type="radio"/> NDVI (Normalized Difference Vegetation Index)	<input type="radio"/> Daily RFE (with 3-Day Forecasts)
<input type="radio"/> RFE (Rainfall Estimate)	<input type="radio"/> Past 6 days RFE & Next 6 days Forecast
<input type="radio"/> RFE Anomaly -- Malaria	<input type="radio"/> Daily 10-Day Moisture Index
<input type="radio"/> SPI (Standardized Precipitation Index)	<input type="radio"/> Daily 10-Day Soil Water Index
<input type="radio"/> Moisture Index	<input type="radio"/> Daily 30-Day Rain and Dry Days
<input type="radio"/> Moisture Index/Soil Water Index Anomaly	<input type="radio"/> Daily 3-Day BERM
<input type="radio"/> BERM (Basin Excess Rainfall Map)	<input type="radio"/> Daily Runoff and Anomaly
<input type="radio"/> ITCZ Position	<input type="radio"/> Daily WRSI
<input type="radio"/> Croplands WRSI	
<input checked="" type="radio"/> Rangelands WRSI	
<input type="radio"/> <u>Seasonal NDVI &amp; Rainfall Charts</u>	

- o MODIS/NDVI at 250m
- o Spot/NDVI

Monitoring and analysis of food security integrates the latest field and remote sensing data as well as markets, production, and other data, and the use of innovative local livelihood analysis to provide an updated analyses of who needs what where. It also includes monitoring of markets and trade.

## Capacity building

Over 500 local personnel trained in applications of remotely sensed products in agriculture and water resources, GIS modeling and applications and stream flow forecasting and flood early warning. In Kenya regional workshops have been held with over 200 participants trained on USGS/FEWS NET products and tools, Arc View GIS applications, flood early warning and stream flow forecasting. In Ethiopia 27 participants have been trained on remote sensing and GIS applications and 15 on flood early warning. In southern Sudan 12 participants have been trained on USGS/FEWS NET tools and products while in Djibouti 29 participants have been trained on remote sensing and GIS applications. In Somalia 26 local participants were trained on USGS/FEWS NET products and tools and in Tanzania 12 participants were trained on river flow forecasting and flood early warning. In Rwanda 22 participants were trained on remote sensing and GIS applications while in Uganda, 14 participants have been trained on USGS/FEWS NET products and tools and 15 participants on flood early

warning and forecasting. Regular field assessments are conducted for product validation.

### **Disseminating the analysis**

This includes information products, regional reports, executive overviews, alert statements, and special market reports to inform decision making.

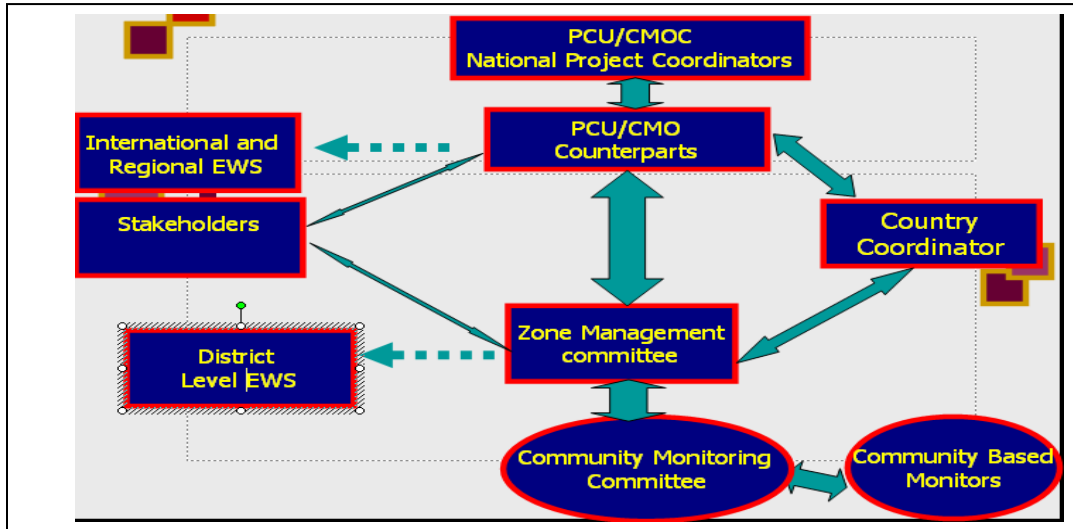
### **Challenges**

- Availability and reliability of data
- Understanding livelihoods
- Accurate identification of chronic vulnerable communities and response

# The Community Based Livestock Early Warning System

*Kisa Ngeiywa, MoLFD*

## CB-LEWS project structure



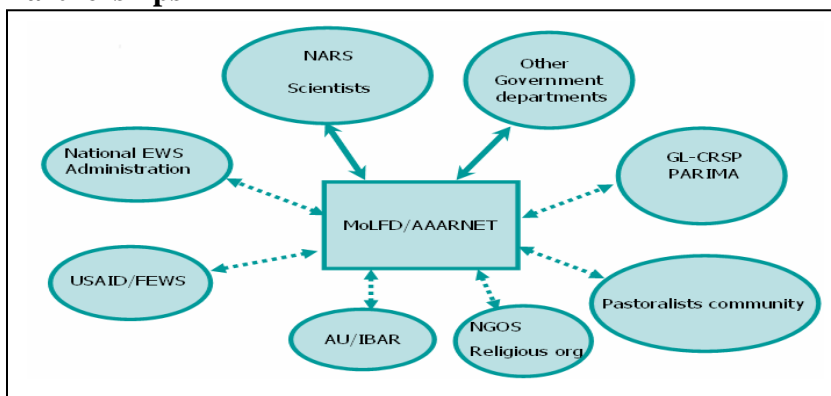
## Overall objective

To ensure that efficient contingency plans and pragmatic mechanisms for interventions are put in place and utilized to deal with crisis situations affecting pastoral communities in Kenya.

## Expected outputs

- An efficient early warning system is established and utilized to trigger timely interventions by all stakeholders to mitigate the effects of crises on pastoralists' herds and livelihoods.
- Environmentally sound contingency plans enacted to improve livestock productivity and ensure appropriate intervention
- Market opportunities and systems that will stabilize the terms of trade for livestock producers during crises are identified, as well as market opportunities for livestock and livestock products
- Pastoral capacity for anticipating and managing crises is enhanced

## Partnerships



## **Implementation steps**

### **Step 1: National planning meeting**

- Work plan for 2006
- Revised survey instruments
- Delineated provisional zones
- Deliberated on the CB-LEWS project structure

### **Step 2: Reconnaissance mission**

- Validation of characterised clusters
- Identification of benchmark sites
- Georeferencing of sample natural resources
- Inventory of zone hardware/software resources
- Establishment of zone management committees with interim chairpersons
- Identification of zone lead institutes
- Expand potential partnership networks with the zone
- Characterization of sample communities

### **Step 3: Stakeholder sensitisation and analysis workshop**

- Sensitisation
- Listening
- Networking
- Incorporation
- Analysis
- Proceedings

### **Step 4: Capacity building**

- Demand driven computer upgrade course
- Geo-spatial data capture, GIS and remote sensing training
- Survey instruments administration
- Worldspace communication system utilisation training
- Other demand driven training initiatives

### **Step 5: Resource mapping and household surveys**

#### **Mapping**

- Migration routes
- Market places
- Endemic diseases
- Resources (water, grazing reserves) along the major migration routes as basis for development and testing potential interventions and contingency plans

## **Step 6**

- Validation of GPS Data
- Participatory mapping
- Prototype early warning messages
- Feedback workshops

## **Step 7**

- Upscaling
- Outscaling to non-benchmark site districts
- Establishing linkages with other disaster management initiatives in the region
- Institutionalization of the crisis management mechanisms/systems into district development plans for takeover by government

## **Major indicators of drought**

- Meteorological
  - Atmospheric factors that influence local weather patterns
  - Observation of the following phenomena at specific times of the year: strong winds from a given direction, higher than normal temperatures, appearance of morning dew
- Biological/ecological
  - Observed natural changes that occur in the local flora and fauna
  - Observation of the following phenomena at specific times of the year: flowering, fruiting or leaf shedding by specific plants at specific times, presence of specific birds or insects for example ants or butterflies in large numbers and migration of wild animals.
- Astrological
  - Cosmological observations of the moon, sun and stars
- Cultural
  - Observing and deciphering patterns in the entrails of slaughtered animals
  - Visions, apparitions and wise counsel of respected community elders

## **Reactions**

- Robert, LINKS: What is the ‘early warning’ aspect in CB-LEWS? From the presentation, one could not capture the livestock early warning that CB-LEWS is addressing. LEWS/GL-CRSP, which is credited with pioneering livestock early warning, is also not included in the partnerships chart, unlike PARIMA/GL-CRSP. Response: CB-LEWS is being implemented within the framework of the Crisis Mitigation in Livestock Systems Project (CMP). We are addressing many issues in CB-LEWS. LEWS/GL-CRSP is included under ‘international and regional EWS’.



- Abbas, KLMC: A lot of information exists in the databases. What is needed is someone to do the dissemination for this information to trickle down to communities. There is no need for duplication, but to add value to what others are already doing.
- Musyoki, DLPO Makueni: The issue is how to link information from all systems, because the information is not being used at all.
- Suleiman, FEWSNET: There is no 'early warning' in overall objective of CB-LEWS, but it is more like intervention planning. The CB-LEWS team should liaise with others working on early warning to fill gaps rather than end up as duplication. They should ensure utilization of information generated by others. Consultation seems to be lacking. Response: CB-LEWS is open to suggestions on how to improve the livestock component.
- Robert, LINKS: It is difficult to discuss CB-LEWS as those who can make decisions are not present.
- Yegon, MoLFD: I will brief the Director of Livestock Production on the discussions and what has been agreed. There is need for a strong national coordinating institution for early warning efforts. There is still time to correct the gaps. From the workshop, we shall talk to one another and get a solution.
- Musili, Representing Chief Range Management Division: Let us explore the issues at depth during group work and chart the way forward.
- Safia, CORDAID: LEWS uses advisories to share information. In which forum will CB-LEWS share the information?  
Response: Worldspace channel, radio broadcasts in Kiswahili and local languages, newsletters, feedback workshops, among others. Let us all work together such that we can use the information generated by others such as LEWS/GL-CRSP.
- Muthoni, FAO/ALRMP: There is need for all of us to talk together. In Kenya, we have very strong early warning systems. However, the main problem is in response which the ADB/ASAL project can address. It is not enough to just take back the reports and advisories but there is need to facilitate communities to respond for mitigation. Let us try to understand and support CB-LEWS.
- Mwongela, DVO Mwingi: For CB-LEWS, the emphasis is on community-based mechanisms of predicting and responding to drought. They need support from 'high tech' systems to improve accuracy and refine the actions that the communities can take.
- Ouma, DLPO Samburu: How do we get this information back to those who seek/need information at local level? There is need for capacity building to interpret information for communities and avail tools to partners to work better.

# **CORDAID Approach in Drought and Disaster Management**

*Safia Abdi*

## **Introduction**

The presenter started by reiterating that her presentation would be different from others because CORDAID does not provide early warning information. Her presentation would mainly be on CORDAID's drought cycle and disaster risk management approaches. Key highlights of the presentation.

- CORDAID is a Dutch funding organisation. It does not implement programs albeit in some emergency situations. Rather CORDAID supports organisations to deliver programs.
- CORDAID gets most of its funds from the Dutch government and the rest from the Dutch public and other formal donors like European Union.
- It supports development and relief organisations in Africa, Latin America, Asia and Eastern Europe.
- The regional office in Kenya covers Kenya, Sudan and Ethiopia.
- CORDAID supports three strategies:
  - Direct poverty alleviation which includes basic service delivery programs like health
  - Civil society strengthening
  - Lobbying and advocacy work
- In Kenya, CORDAID partners are in the urban areas of Nairobi and Kisumu, and in the ASALs.
- The kind of partners includes a mix of church and non-church, local NGOs/CBOs and international NGOs, young and mature organisations.



Safia Abdi of CORDAID makes her presentation

## **The drought cycle management approach**

In its ASAL programs in Kenya and other countries, CORDAID uses the drought cycle management (DCM) approach. This is not a new approach but is also used by other organisations. The DCM approach takes cognisance of different stages of drought and the different interventions necessary for the specific stage. Stages as commonly known are normal, alert/alarm, emergency and recovery. During normal stage the kinds of programs implemented are for mitigation purpose, alert is for preparedness, during emergency what is required is for relief assistance, and during the recovery stage, the activities are aimed at reconstruction.

While one cannot clearly demarcate the stages, with a good early warning system, it is possible to predict what stage an area is in at a particular time. In terms of intervention, it

is a continuum where there are cyclically changing realities with moments of crises and normality. Those moments will determine the emphasis of our action but will not limit them. Moreover, reliable and accessible EWS is necessary for right targeting of programs. Thus EWS is essential for funding organisations, governments, implementing organisations, and the community who always bear the brunt of many hazards.

### **The DCM program**

CORDAID is currently implementing a DCM program dubbed “right action at right time”. This program provides flexible funding to partner organisations based on the stages of the drought. Before this program, CORDAID with funds from European Union, and technical input from International Institute for Rural Reconstruction and Acacia Consultants developed a DCM toolkit for use by organisations including governments.

### **Disaster risk management**

CORDAID has accumulated a lot of experiences in supporting development and relief programs especially in disaster prone areas. It is against this backdrop that in its new strategic plan, which starts in 2007, CORDAID has identified disaster risk management as one of its program areas. This model uses hazards, vulnerability, and capacity as key concepts of analysis aimed at reducing risks and disasters. In today’s world where there are more conflicts and climate change resulting to frequent droughts and floods, this approach is essential. CORDAID will invest in building the capacity of its partners to understand the model, and implement it in their programs.

### **Challenge to the participants**

- How can we get the early warning system information to the grass-root level?
- The past practice has been, we extract information from the communities but we do not disseminate back.

## Role of FVA in Delivering Information to Remote Areas of Eastern Africa

*Aaron Sundsmo*

The mission of First Voice Africa is to provide individuals across Africa, isolated by geography, illiteracy or poverty, with the opportunity to receive locally relevant information, communicate with the world around them and share their experiences with similar communities. This by integrating technologies, such as broadband global area network, WorldSpace satellite system, solar panels, Internet, AM/FM community radios, mobile phones.

### The opportunity gap

Challenges	Response
Poverty Isolation/lack of infrastructure Illiteracy/poor access to information Multisectoral ■ Early warning ■ Health ■ Education ■ Natural resource management ■ Economic development	Expanding the rural information Infrastructure Delivering relevant content ■ Timely food security and natural disaster information ■ HIV awareness and prevention ■ Distance education ■ Weather and climate information ■ Market price information

The burden of information poverty is borne by those most vulnerable to disease, economic hardship and isolation.

### Eastern Ethiopia (Somali and Afar Regions)

Needs	Challenges
■ Early warning information for pastoralists ■ Food security ■ Market prices ■ Weather and climate ■ Agricultural best practice ■ Primary education	■ Large geographic areas ■ Low infrastructure -electricity, communications ■ Low population density ■ Minority language ■ Low levels of education ■ Low levels of motivation by local government staff

### First Voice Africa's response

- FVA designed a unique cost-effective communication delivery system specifically for Eastern Ethiopia and built the capacity of a local team to manage the network.
- FVA partnered with locally credible organizations to play two critical functions: mobilize local communities and develop relevant content

## **FVA's solution**

Early warning: Community Information Centers (CICs)

- Designed cost-effective communications strategy adapted for local conditions and constraints
- Procured and delivered equipment to the region
- Trained regional project staff to provide overall technical support and create and upload relevant content for use by the CICs
- Trained extension workers on installation, maintenance and use of the system

## **Community mobilization**

Save the Children-United Kingdom and Ethiopia's Disaster Preparedness and Prevention Bureau (DPPB) were identified to:

- Recruit and manage 48 CICs
- Develop community stakeholder committees at each CIC
- Manage regional program staff and coordinate partner activities

## **Development of relevant content**

LINKS and Save the Children-United Kingdom were identified to:

- Assess community information needs
- Design relevant content for delivery by FVA

FVA is currently in conversation with additional content providers.

## **Phase I impact**

9 CICs with 334,000 pastoralists receiving early warning information

## **Reasons for success**

- Collaboration with multiple stakeholders
- Local capacity built to maintain low-cost, rugged systems
- Variety of content increases usefulness and demand

## **Reactions**

▪ Oduor, ALRMP: I am impressed with the community information centres working in Ethiopia. What specifically did the communities do with that information?

Response: A group of women organized themselves and sold goats to another market and made 30% more profit. These are the early stages and there are several other examples.

- Suleiman, FEWS NET: Success could also have been due to the good information dissemination/sharing among the Somali community. We have very few community radios in that area.

Response: With technological innovations, more can be achieved in terms of information dissemination to remote areas.
- Muthoni, FAO/ALRMP: This is a good idea that can be applied locally. But what about communities who are mobile?

Response: Develop mobile CIC for portability.
- Kamau, Concern Worldwide: What were the major challenges?

Response: Generating relevant content that is updated regularly and translated to local languages; getting projects sustainable at local level for example staff at local level, and high turnover rate of government staff among other issues.
- Ouma, DLPO Samburu: I ran into a problem when using the Worldspace system. The reliability of Worldspace collaborators as providers of information is wanting. For example the LEWS information just went off the system. Sustainability of information is important. And how do we communicate back given the one-way pathway in Worldspace?

Response: We are now formalising the working modalities with LINKS through partnership. We have now developed a two-way communication system by integrating with cellphones for SMS and limited two-way internet access for text only and not multi-media. Sustainability can also be promoted by use of Worldspace system at the CIC for small businesses for example charging mobile phones using the solar panels. The problem of scheduling of Worldspace programs can be overcome by working with partners to agree on the best times for broadcasting.

## **Group Tasks**

### **Group 1**

#### **Members**

1. Michael Okoti
2. Daniel Kamau
3. Joel Okal
4. Aaron Sundsmo
5. Wario Abdullahi
6. Edward Kateiya
7. Jacktone Achola
8. Julius Kombe

**a) Evaluate the strengths and weaknesses of the early warning systems in terms of their design, structures, costs and outputs.**

#### **Strengths**

- Science used/scientific data by FEWSNET and LEWS/GL-CRSP projects good-the amount the data collected and testing of the models proven good
- Inclusion of marketing issues in EWS
- Going multi-sectoral is a positive trend-issues like water, diseases, conflicts
- Increased partnerships
- Stakeholder's goodwill-government, donors, NGOs
- Produce information useful for policy and intervention
- In most instances, the information produced is reliable

#### **Weaknesses**

- Information not well adapted to the community level/circumstances (design of the material)
- No evidence for impacts of the EWS information on the community
- Information not reaching the end users well (dissemination)
- Sustainability not ensured
- Limited/weak institutional linkages-poor networking
- Lack of coordination of the EWS activities
- Some of the data collected is unreliable
- Costs of the EWS did not come out in the presentations, so it may be difficult to compare costs.

**b) Propose how to improve their effectiveness/efficiencies.**

- Need to have a coordinating body on EWS issues
- Need to strengthen capacity of organizations to produce relevant EWS information for communities
- Focus on dissemination of materials to the community level
- Build capacity of the community to use the EWS products
- Sustainable finances for the coordinating body
- Coordinating body to harmonize EWS from different stakeholders
- Policies to guide EWS in the country
- Ensure data collected is a true reflection of the conditions on the ground
- Conduct cost-benefit analyses of the EWS in the country by an independent player
- Integrate the scientific EWS with the ITK on early warning
- Strengthen linkage of the producers/stakeholders in early warning information with implementing stakeholders

**Group 2**

**Members**

1. D. K. Tonui
2. D.M Musyoki.
3. Kisa Ngeiywa
4. Lawrence Mwongela
5. Fredrick Aloo
6. G. C Machira.
7. Davis Kinyua
8. Safia Abdi

**Early Warning Systems**

1. FEWSNET
2. Global Livestock CRSP/LEWS
3. CB-LEWS-not yet at data collection stage



A group working session



**a) What are the strengths and weaknesses of the methodologies used in data collection, analysis and reporting/dissemination?**

		Strengths	Weaknesses
FEWSNET	Data collection Satellite imagery Partners	-Covers wide area -Timely -Ability to work with partners	-Expensive to install -Information requires validation -Accuracy of information may be doubtful -Lack capacity to verify data
	Analysis	-Continuous monitoring -Appropriate parameters -Have developed internal capacity and systems	
	Report dissemination	-Have a website -Produce periodic bulletins targeting various consumers (policy, farmers, etc) and regions	-Limited ICT access by partners and beneficiaries -Lack of feedback fora -Information does not reach grassroots, ends at national level -Information too technical to comprehend
GL-CRSP/ LEWS	Data collection (Satellite imagery, monitoring sites)	-Automated system -Have site monitors for verification -Appropriate parameters and verified through field sampling -Reliable and accurate data -Room to include more parameters e.g. water, diseases, conflicts	-Very expensive -Depends on goodwill
	Analysis	-Continuous monitoring -High-tech and reliable	
	Report dissemination	-Have website -Recurrent update, bulletins, etc Radio programmes	As in FEWSNET

**b) Propose how they can be improved to better meet the information needs of different stakeholders.**

- Stakeholder involvement should be strengthened
- Timely sharing of information especially with users
- Information packaging should be user friendly for easier understanding
- Update database of the users, with a view to expand to districts
- Strengthen capacity of users/partners
- Enhance collaboration with other EWS
- Integrate ITK
- To achieve sustainability, build capacity with users and other institutions including government departments dealing with livestock EWS

**Group 3**

Members

1. James Oduor
2. J. N. Ndung'u
3. Gideon Galu
4. Maurice Ouma
5. J. M. Waititu
6. A. S. Musili
7. F. M. Nthimba
8. Hezron Ripko

Early Warning Systems

1. Global Livestock CRSP/LEWS
2. FEWSNET
3. CB-LEWS
4. ALRMP
5. Others

**a) How can these systems complement one another to improve impact at the community level?**

The early warning systems presented can indeed complement each other. However, there is need to:

- Do an inventory/analysis of stakeholders to determine who has what information
- Establish a consultative forum or structure to share information and harmonize the EWS e.g. the KFSM structure from national to local level
- Capacity building of partners/stakeholders to facilitate collection of accurate/reliable data
- Share responsibilities to avoid duplication and exploit respective strengths-who is best placed to provide what information, who can do what, and at what level

- Improve communication channels for delivering information and get feedback from users at various levels
- Establish monitoring and evaluation mechanisms to assess effectiveness of the EWS

**b) What does it take to ensure long term functional existence of these early warning systems beyond their current hosts?**

- Capacity building for partner organizations and users in terms of training, sensitization, equipment, etc
- Institutionalize EWS within national government structures
- Mainstream disaster management into development activities and school curriculum
- Networking/collaboration between various stakeholders

**c) Propose institutional/policy arrangements that need to be put in place to facilitate this process.**

- Formulate necessary legal backing, expand mandate where necessary and develop terms of reference for existing drought management institutions e.g. the KFSM structures
- For long term sustainability, there is need to include cost of maintaining a national EWS in the government budget
- License community radios to enhance information access for remote users to widen coverage

## **Future of Livestock Early Warning in Kenya**

*Alphonse Musili, MoLFD*

- Collaboration and networking with all stakeholders
- Orderly sharing of information
- Frequent meetings and workshops
- Develop common early warning database in Kenya
- Improving range vegetation resources
- Information dissemination
- Response, for example provision of hay to affected herds, based on available information

## Way Forward

- Recommend how the Community Based Livestock Early Warning System being implemented by the ADB/ASAL project should be designed to add value to the existing early warning systems
- Explore possibility of developing a collaborative national livestock EWS using the NLMIS approach
- Analyze the existing early warning systems and address the gaps in terms of geographical coverage among others
- Summary of group presentations and base recommendations on that
- Sub-committee to look at issues raised and how to address them-major players in EWS
- Task force nominated to include MoLFD, LINKS/LEWS, FAO, ALRMP, FEWS-NET, KWS, ADB-ASAL/CB-LEWS, MoA, FVA, Universities
- Leader/convenor-MoLFD to lead the process
- FAO will support the Ministry initially
- Terms of reference: Shape and develop an early warning system that is sensitive to needs of different stakeholders. Review the Community Based LEWS to make it more responsive and integrated to other early warning systems
- LINKS information on forage and marketing is needed to strengthen early warning information through the KFSM structure. LINKS has not been receiving regular invitations and needs to participate more in KFSM meetings
- Capacity building for players in early warning, development agencies, communities
- Adapt FVA model for information dissemination
- First meeting of task force in 2-3 weeks time
- This meeting will develop Terms of Reference to make the livestock-based early warning systems more comprehensive
- The task force will report to the larger group

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Republic of Kenya 2006. Sustainable livestock development programme for the arid and semi-arid lands of Kenya. Ministry of Livestock and Fisheries Development. August 2006.

Republic of Kenya 2005. Background document for the national policy for the sustainable development of arid and semi-rd lands of Kenya. September 2005.

## Appendix I: List of Participants

Name	Institution	Address/E-mail	Position
1. Ouma Maurice	MOLFD, Samburu	onyiouma2002@yahoo.com	DLPO
2. D.M. Musyoki	MoLFD, Makueni	dmkingalyak@yahoo.com	DLPO
3. John Wang'ang'a	MoLFD, Mandera	wangangaj@yahoo.com	DVO
4. Michael Okoti	KARI, Marsabit	michaeldominion@yahoo.com	Research Officer
5. Fredrick Aloo	NEPDP, Garissa	fdkaloo@yahoo.com	Livestock Marketing Officer
6. Muthoni Mwangi	FAO/ALRMP	muthoni.mwangi@fao.org	National Project Officer
7. Calum McLean	FAO/ALRMP	calum.mclean@fao.org	Project Manger
8. Boniface Barasa	Catholic Diocese, Malindi		Field monitor
9. J.M.N. Waititu	MoLFD, Laikipia		District Range Officer
10. Julius Kombe	MoLFD, Malindi		District range Officer
11. Jacktone Ochola	MoLFD, Kajiado	ocholayala@yahoo.com	DVO
12. L.I. Mwongela	MoLFD, Mwingi	P.O. Box 178, Mwingi	DVO
13. Daniel Kamau	Concern Worldwide	daniel.kamau@concern.net	Livelihoods Program Officer
14. G.C. Machira	MoLFD	P.O. Box 96 Marsabit	DVO
15. Jurjen Draaijer	FAO	jurjen.draaijer@fao.org	Livestock Specialist
16. Yergalem Berati	Oxfam GB		Program Coordinator
17. Tonui D.K.	MoLFD, Baringo		DLPO
18. Gideon Galu	FEWS NET	ggalu@fews.net	Regional Representative
19. Walter Knausenberger	USAID/EA	wknausenberger@usaid.gov	Senior Environmental Advisor
20. Peter Muriithi	MoLFD, Narok		DVO
21. Samuel Yegon	MoLFD, Nairobi		Chief, Livestock Marketing Division
22. James Tendwa	MoLFD, Nairobi	jtendwa@nalep.co.ke	Project Coordinator, ADB/ASAL
23. J. S. Okal	MoLFD, Garissa	P.O. Box 129 Garissa	Deputy DLPO
24. Edward Kateiya	ENSDA	P.O. Box 213, Narok	Agri-Business Manager

25. James Oduor	ALRMP	j.oduor@aridland.go.ke	Drought Monitoring Coordinator
26. Abbas Mohamed	KLMC	abbasm@livestockcouncil.org	Executive Director
27. Kisa Juma Ngeiywa	MoLFD, Nairobi	P.O. Box 34188, Nairobi	Senior Assistant DVS
28. Charles Marwa	FARM-Africa		Policy Analyst
29. Abdullahi Wario	MoLFD, Moyale	P.O. Box 84, Moyale	DLPO
30. Alphonce Musili	MoLFD, Nairobi	P.O. Box 34188, Nairobi	Range Management Officer
31. Hezron Ripko	AIC, Kapenguria	P.O. Box 207 Kapenguria hezronr@yahoo.com	Program Coordinator
32. David Kinyua	USAID/EA	P.O. Box, Nairobi dkinyua@usaid.gov	Regional Pastoralism Specialist
33. Joseph Mbindyo	MoLFD, Isiolo	P.O. Box 101, Isiolo	Extension Officer
34. Aaron Sundsmo	FVA	PO Box 856-00606 Nairobi asundsmo@firstvoiceint.org	Regional Director
35. Gatarwa Kariuki	LINKS, Nairobi	gatarwa.kariuki@cgiar.org	Project Officer
36. Joseph Ndung'u	LINKS, Nairobi	j.ndungu@cgiar.org	Consultant
37. Robert Kaitho	LINKS, Texas A&M	rkaitho@cnrit.tamu.edu	Project Coordinator
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## Appendix II: Workshop Program

<b>Time</b>	<b>Item</b>
0830 - 0900	Registration
<b>Session I</b>	<b><i>Chair: Samuel Yegon      Rapporteur: Joel Lang'at</i></b>
0900 - 0910	Welcome, Introductions Opening remarks <i>James Tendwa: National Coordinator, ADB/ASAL project</i>
0910 - 0920	Workshop opening <i>Director of Livestock Production</i>
0920 - 1030	Workshop objectives <i>Gatarwa Kariuki</i> LEWS/Global Livestock CRSP <i>Robert Kaitho</i>
1030 - 1100	Tea break
<b>Session II</b>	<b><i>Chair: Isaiah Imita      Rapporteur: Joseph Ndung'u</i></b>
1100 - 1115	Discussion
1115 - 1130	ALRMP early warning <i>Joel Lang'at</i>
1130 - 1145	FEWSNET <i>Gideon Galu</i>
1145 - 1200	ADB/ASAL CB-LEWS <i>Njoroge Wamwere</i>
1200 - 1215	Disaster Risk Management and the DCM approach <i>CORDAID</i>
1215 - 1300	Discussion
1300 - 1400	Lunch break
<b>Session III</b>	<b><i>Chair: Njoroge Wamwere      Rapporteur: Safia Abdi</i></b>
1400 - 1445	Group tasks
1445 - 1530	Group presentations
1530 - 1545	The role of Firstvoice Afdrica in delivering information to remote areas of eastern Africa <i>Aaron Sundsmo, FVI</i>
1545 - 1600	The future of livestock early warning systems in Kenya <i>A.O. Esmail: Chief, Range Management Division</i>
1600 - 1615	Tea break
1615 - 1630	Way forward
1630 -	Workshop closing <i>Fatuma Abdikadir: National Coordinator, ALRMP</i>

### Appendix III: Accessing LEWS/GL-CRSP Forage Early Warning on Internet

You can easily access the various Global Livestock-CRSP/LEWS and LINKS products from the internet in a cyber café, post office or other location by following the steps below.

First, open the website <http://glews.tamu.edu/africa> where you will see the **Main Menu** and a **Regional Map** for the Greater Horn of Africa (GHA) countries. You can also use <http://glews.tamu.edu> and select the **Africa LEWS Portal**.

#### I. Using the main menu

1. By clicking on a country, you will see a map with the LEWS monitoring zones in that country. If you select a zone e.g. Northern Kenya, you get a summary of **Runs** for all sites in that zone. By selecting **Run Name/Plant Community or Site Name** e.g. KE-NO-GSA-01 or just Garissa, the details of each site are displayed. You can view additional information for a site by clicking the highlighted words below the graphs. For an interpretation of the Status colours, refer to Step 3 (b) below.
2. If you click on **Maps**, you get the **Regional and Zone Forage Maps** with several options:
  - a. The **Dekadal Forage Maps** from 2001 to 2006 give the 10-day **Forage Available in kg/ha in GHA Region**. Each month is divided into three 10-day periods called dekads.
    - i. By clicking on a ticked cell, you get the forage available in the selected dekad of that month.
    - ii. The 60d\_Forecast ticked cell gives the **Projected Forage Available (kg/ha)** 2 months ahead.
  - b. The **Dekadal Forage Deviation Maps** from 2001 to 2006 give the **Forage Deviation (%) in GHA Region**. This map compares the available forage with the long-term normal (historical average forage) for an area.
    - i. By clicking on a ticked cell, you get the forage deviation for the selected dekad of that month.
    - ii. The 60d\_Diff ticked cell gives the **Forage Projection (% Change) in GHA Region** in the next 2 months.
  - c. The **Zone Forage Maps** show the **Forage Deviation (%)** for each country and zone for the last 3 dekads.

3. The **Report Downloads** gives the **Publications and Situation Reports** published by LEWS/GL-CRSP.
  - a. If you click on **Publications**, then follow the link **Livestock Early Warning Systems (LEWS)**, you get all the LEWS reports including bulletins/research briefs and other documents. If you follow the other link **Global Livestock CRSP**, you go to the Global Livestock Collaborative Research Support Program main website. You can still get the LEWS and LINKS research briefs here under **Publications**.
  - b. If you click on **Situation Report**, you can view and download the current and past issues of the **Monthly Situation Reports** for each country. The monthly advisories contain both forage (status and trend) and livestock marketing information. The Regional Outlook gives the Regional Forecast for the next 2 months and an **Interpretation of the Legends/ Status Keys** used in the forage maps. This is the same map as you saw in Step 2 (a) (ii).

## II. Using the regional map

By clicking on a country, you will see a map with the LEWS monitoring zones in that country. If you select a zone, all the **Site Runs** for that zone are displayed. If you select a **Run Name/Plant Community or Site Name**, the details of each LEWS site are given. As you can see, this gives the same results as Step 1.

## III. Livestock marketing information

If you select **LINKS** in the **Main Menu**, you can access the **Livestock Marketing Information System (LMIS)** for each individual country (Kenya, Ethiopia and Tanzania) and the central database for all countries. You can choose the item of interest from the displayed menu.

Alternatively, you can log in directly using <http://links.tamu.edu> (central database) or <http://www.lmiske.net> for Kenya, <http://www.lmistz.net> for Tanzania and <http://www.lmiset.net> for Ethiopia.

## IV. Receiving monthly situation reports via e-mail

By subscribing to Africa Livestock Early Warning System (**AfricaLEWS-[africalews@cnrit.tamu.edu](mailto:africalews@cnrit.tamu.edu)**), you are included in our list-serve to enable you automatically receive monthly updates of forage early warning and livestock marketing information from LINKS. To enjoy this service, you need the following:

- Reliable office e-mail that can allow attachments of up to 1MB
- Computer installed with Adobe Reader 7.0 for opening .pdf documents

If you satisfy these requirements, kindly avail your contact details to us (Name, Organization, Address, Telephone and E-mail). If this is not possible, please suggest other efficient channels through which you can get the information.